

Spot Safety Project Evaluation

Project Log # 200505115

Spot Safety Project # 01-97-007

**Spot Safety Project Evaluation of the Installation of Guardrail and Roadway Overlay on US 17B/NC
343 at US 17 Bypass (bridge) in Camden County**

Documents Prepared By:

Safety Evaluation Group
Traffic Safety Systems Management Section
Traffic Engineering and Safety Systems Branch
North Carolina Department of Transportation

Principal Investigator

Samuel D. Coleman, EI

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Date

Traffic Safety Project Engineer

Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 01-97-007 - On US 17B/NC 343 at US 17 Bypass (bridge) in Camden County.

Introduction

In an attempt to assess the safety of our roads, the Safety Evaluation Group of the Traffic Safety Systems Management Section has evaluated the above project. The methodologies used in this evaluation offer various philosophies and ideas, in an effort to provide objective countermeasure crash reduction results. A naive before and after analysis of the treatment data has been completed to measure the effectiveness of the spot safety improvement. Additional analysis methods were not utilized for this evaluation because a suitable comparison group was unattainable. This information is provided to you so the benefit or lack of benefit for this type of project can be recognized and utilized for future projects.

Project Information and Background from the Project File Folder

The spot safety project improvement countermeasure chosen for the subject location was to construct guardrail adjacent to bridge piers and overlay 0.2 miles of roadway with 1" BSBC Type I-2 where US 17 B crosses under the US 17 Bypass bridge. US 17 B is a two-lane facility with no left turn lanes and a speed limit of 55 mph. The background information contained two fatal crashes in August of 1997. Both crashes included vehicles that hydroplaned into the bridge piers adjacent to US 17 B. These two fatal crashes were the cause for the improvement. The final completion date for the resurfacing project was September 5, 1997 at a cost of \$30,000.

Naive Before and After Analysis

After reviewing all the crashes at the subject location, the crash data omitted from this analysis to consider for an adequate construction period was from August 1997 through October 1997. The before period consisted of reported crashes from January 1, 1990 through July 31, 1997 (7 Years, 7 Months) and the after period consisted of reported crashes from November 1, 1997 through May 31, 2005 (7 Years, 7 Months). The ending date for this analysis was determined by the available crash data at the time the crash analysis was completed.

The treatment data consisted of all crashes on US 17B/NC 343 at US 17 Bypass, 1000 feet north and south of the bridge piers in Camden County. A 0-foot Y-line was used in the analysis.

The following data table depicts the Naive Before and After Analysis for the above information. Please note that Ran Off Road crash types were the target crashes for the applied countermeasure. These crash types considered are as follows: Ran Off Road-Left, Ran Off Road-Right, Ran Off

Road-Straight, Overturn/Rollover, Fixed Object, Head-On; Sideswipe, Same Direction; Sideswipe, Opposite Direction.

<u>Treatment Information</u>			
	Before	After	Percent Reduction (-) Percent Increase (+)
Total crashes	2	0	-100.0
Total Severity Index	76.8	0.0	-100.0
Target Crashes	2	0	-100.0
Target Severity Index	76.8	0.0	-100.0
Volume	800	1200	50.0
<u>Treatment Injury Information</u>			
	Before	After	Percent Reduction (-) Percent Increase (+)
Fatal	2	0	-100.0
Class A	0	0	0.0
Class B	0	0	0.0
Class C	0	0	0.0
Property Damage Only	0	0	0.0
<u>Target Injury Information</u>			
	Before	After	Percent Reduction (-) Percent Increase (+)
Fatal	2	0	-100.0
Class A	0	0	0.0
Class B	0	0	0.0
Class C	0	0	0.0
Property Damage Only	0	0	0.0
<i>Crashes into bridge pier</i>	2	0	-100.0

The naive before and after analysis at the treatment location resulted in a 100.0 percent decrease in Total Crashes, a 100.0 percent decrease in Target Crashes, and a 50.0 percent increase in Average Daily Traffic (ADT). The before period ADT year was 1994 and the after period ADT year was 2001.

Results and Discussion

The naive before and after analysis involving the comparison of treatment actual before data versus treatment actual after data resulted in a 100.0 percent decrease in Total Crashes and Target Crashes. The summary results demonstrate that the treatment location appears to have had a decrease in the number of Total Crashes and Target Crashes from the before to the after period.

The before period shows only two crashes for this study. Both crashes involved vehicles losing control on a wet roadway within the same month. During the field investigation, a swamp was noted to be approximately 100 feet to the west, adjacent to US 17 B. The evening of November 21, 2005 yielded rain until the morning of November 22, 2005, 10:00 AM. Referencing the photos, there is heavy puddling in the grass between the swamp and US 17 B. Before installing guardrail and the improved roadway, water may have been standing in the roadway after a heavy rain. Due to the construction, the shoulder may have been stripped of vegetation and allowed water to drain more effectively away from the roadway.

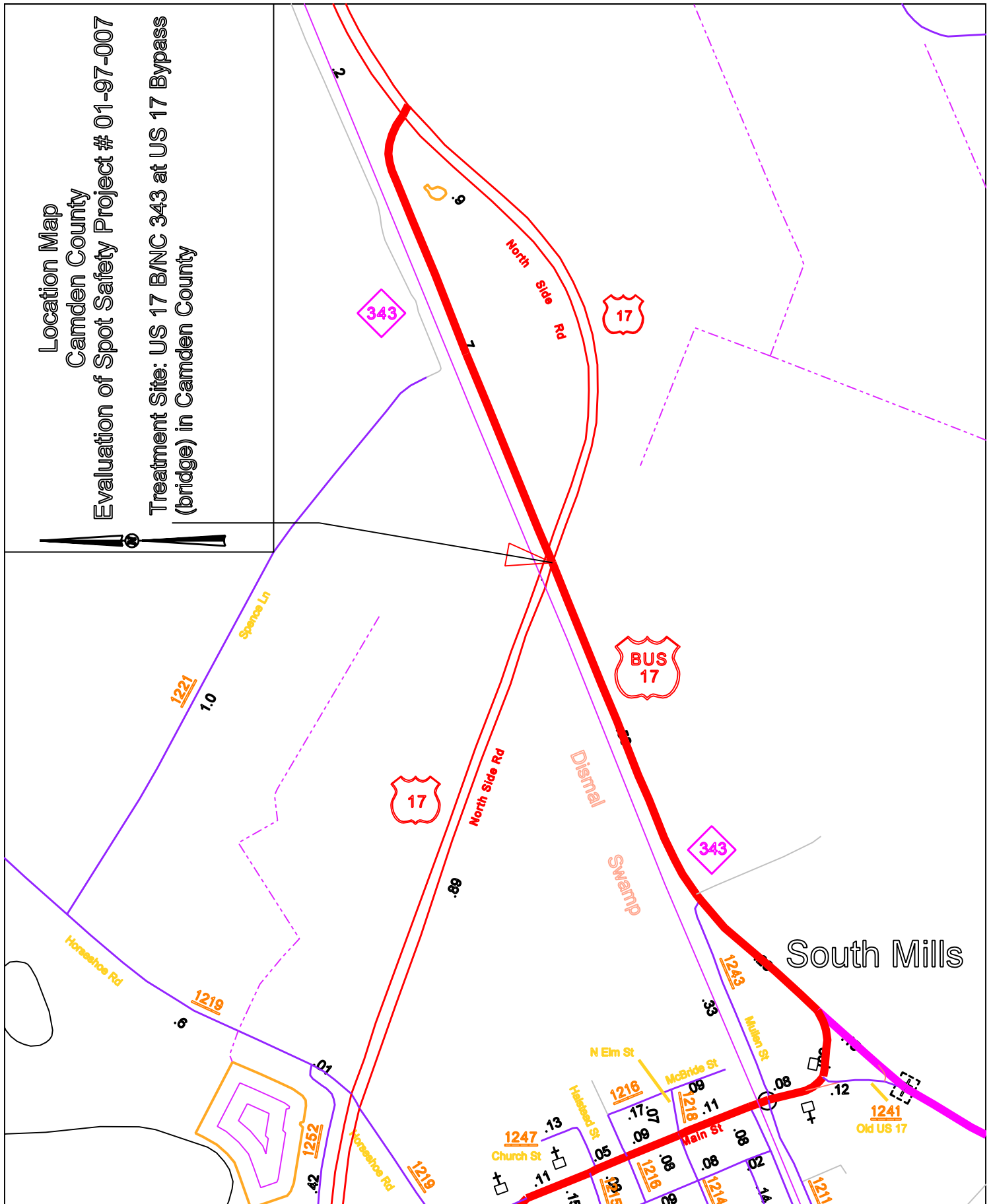
The improved surface seemed to help reduce crashes and keep vehicles on the road in wet conditions. The installation of the guardrail should protect vehicles from a collision with the bridge piers to help reduce severity in the event of a crash. As the Safety Evaluation Group completes additional spot safety reviews for this type of countermeasure, we will be able to provide objective and definite information regarding actual crash reduction factors for this type of condition.

Location Map

Camden County

Evaluation of Spot Safety Project # 01-97-007

Treatment Site: US 17 BNC 343 at US 17 Bypass
(bridge) in Camden County



Treatment site photos taken November 22, 2005



Swamp area east of US 17 B



Swamp area east of US 17 B



Facing US 17 B south



Facing US 17 B north



Eastern shoulder of US 17 B